

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in the application.

Listing of Claims:

1. (Currently Amended) An access restriction information setting method which sets up access restriction information on a storage device, in a storage area network system having the storage device which determines ~~right or wrong of~~ whether or not an access request to a volume is permitted in accordance with access restriction information which is set up on a port which receives the request, and a host computer which transmits an access request to said storage device through a first network, ~~τ~~ comprising:

a first step for obtaining access restriction information and information of a volume which are set up on each port ~~that~~ of a first storage device ~~has~~, through a second network;

a second step for obtaining attribute information including a port type and a status of utilization of each port ~~of that~~ a second storage device ~~has~~, from said second storage device through said second network;

a third step for selecting a port of said second storage device which is utilized for an access to a volume ~~that~~ of said first storage device ~~has or had~~, on the basis of attribute information of each port that said second storage device has, which is obtained in said second step; and

a fourth step for setting up, on a port of said second storage device which is selected in said third step, access restriction information of a port of said first storage device to which a volume, of which the port is utilized for an access, is assigned, on the basis of access restriction information and information of a volume of each port that said first storage device has, which are obtained in said first step.

2. (Original) An access restriction information setting method according to Claim 1, wherein

said third step selects a target port which is utilized for reception of an access request to a volume that said first storage device has from said host computer, and an initiator port which is utilized for transmission of an access request to a volume that said first storage device has from said second storage device, and

said fourth step sets up, on a target port of said second storage device which is selected in said third step, access restriction information of a port of said first storage device to which a volume, of which the port is utilized for an access, is assigned, and permits only an access request to access restriction information of said first storage device to which the volume is assigned from an initiator port of said second storage device which is selected in said third step.

3. (Original) An access restriction information setting method according to Claim 1, wherein

said first step obtains access restriction information which is set up on each port that a first storage device has and information of a volume, from said first storage device through said second network.

4. (Original) An access restriction information setting method according to Claim 1, wherein

said first step specifies access restriction information which is set up on each port that a first storage device has and information of a volume, by obtaining information of a port of said host computer which is utilized for an access to a volume that said first storage device has and information of a port of said first storage device, from said host computer through said second network.

5. (Original) An access restriction information setting method according to Claim 1, further comprising:

a fifth step for changing a port of said first storage device which is associated with each mount point of a file system of said host computer and a volume which is assigned to the port, to a port of said second storage device which is utilized for an access to the volume and a volume which is defined on the port.

6. (Original) An access restriction information setting method according to Claim 1, wherein

said first storage device sets up access restriction information on each port, by use of a first management table in which an information identifier of a volume and a source port of an access to be permitted are listed with a LUN unit with respect to each port, and

said second storage device sets up access restriction information on each port, by use of a second management table in which a LUN and an identifier of a volume are listed with a group unit of source ports of an access to be permitted with respect to each port, and

said first step obtains said first management table, and

said fourth step prepares said second management table as to each port of said second storage device which is selected in said third step, on the basis of a listed content of said first management table which is obtained in said first step as to each port of said first storage device to which a volume, of which said port is utilized for an access, is assigned, and updates said second management table that said second storage device has.

7. (Original) An access restriction information setting method according to Claim 1, wherein

in case that said host computer has a plurality of paths which are used for an access to the same volume, a process of said fourth step to the volume is carried out at least twice separately to said plurality of paths.

8. (Original) An access restriction information setting method according to Claim 1, wherein

said second network is different from said first network.

9. (Currently Amended) An access restriction information setting apparatus which sets up access restriction information on a storage device, in a storage area network system having the storage device which determines whether or not ~~right or wrong~~ of an access request to a volume is permitted in accordance with access restriction information which is set up on a port which receives the request, and in a host computer which transmits an access request to said storage device through a first network, comprising:

a obtaining unit which obtains access restriction information and information of a volume which are set up on each port ~~that~~of a first storage device ~~has~~, and attribute information including a port type and a status of utilization of each port ~~that~~of a second storage device ~~has~~, through a second network;

a selecting unit which selects a port of said second storage device which is utilized for an access to a volume of~~that~~ said first storage device ~~has or had~~, on the basis of attribute information of each port that said second storage device has, which is obtained in said obtaining unit; and

a setting unit which sets up, on a port of said second storage device which is selected in said selecting unit, access restriction information of a port of said first storage device to which a volume, of which the port is utilized for an access, is assigned, on the basis of access restriction information and information of a volume of each port that said first storage device has, which are obtained in said obtaining unit.

10. (Currently Amended) An access restriction information setting system having first and second storage devices which determine ~~right or wrong of whether or not~~ an access request to a volume is permitted in accordance with access restriction information which is set up on a port which receives the request, a host computer which transmits an access request to said first and second storage devices through a first network, and an access restriction information setting device which is connected to said first and second storage devices through a second network, wherein

said access restriction information setting device comprising:

an obtaining unit which obtains access restriction information and information of a volume which are set up on each port ~~that~~of said first storage device ~~has~~, and attribute information including a port type and a status of utilization of each port ~~of that~~ said second storage device ~~has~~, through a second network;

selecting unit which selects a port of said second storage device which is utilized for an access to a volume ~~of that~~ said first storage device ~~has or had~~, on the

basis of attribute information of each port ~~of that~~ said second storage device ~~has~~, which is obtained in said obtaining unit; and

setting unit which sets up, on a port of said second storage device which is selected in said selection unit, access restriction information of a port of said first storage device to which a volume, of which the port is utilized for an access, is assigned, on the basis of access restriction information and information of a volume of each port that said first storage device has, which are obtained in said obtaining unit.

11. (Currently Amended) A computer-readable program for setting access restriction information on a storage device, in a storage area network system having the storage device which determines ~~right or wrong of whether or not~~ an access request to a volume is permitted in accordance with access restriction information which is set up on a port which receives the request, and a host computer which transmits an access request to said storage device through a first network, wherein said program ~~causes~~ makes a computer to execute:

a first step for obtaining access restriction information and information of a volume which are set up on each port ~~that of~~ a first storage device ~~has~~, through a second network;

a second step for obtaining attribute information including a port type and a status of utilization of each port ~~of that~~ a second storage device ~~has~~, from said second storage device through said second network;

a third step for selecting a port of said second storage device which is utilized for an access to a volume ~~of that~~ said first storage device ~~has or had~~, on the basis of attribute information of each port ~~of that~~ said second storage device ~~has~~, which is obtained in said second step; and

a fourth step for setting up, on a port of said second storage device which is selected in said third step, access restriction information of a port of said first storage device to which a volume, of which the port is utilized for an access, is assigned, on the basis of access restriction information and information of a volume of each port that said first storage device has, which are obtained in said first step.

12. (Currently Amended) An access restriction information setting method in which, in a storage area network system having ~~a~~the storage device which determines ~~right or wrong of~~whether or not an access request to a volume is permitted in accordance with access restriction information which is set up on a port which receives the request, and a host computer which transmits an access request to said storage device through a first network, an access restriction information setting device which is connected to said storage device through a second network sets up access restriction information on said storage device, wherein

said access restriction information setting device;

obtains access restriction information and information of a volume which are set up on each port ~~of that~~ a first storage device ~~has~~, through said second network,

obtains attribute information including a port type and a status of utilization of each port ~~that of a~~ said second storage device ~~has~~, from said second storage device through said second network,

selects a port of said second storage device which is utilized for an access to a volume ~~of that~~ said first storage device ~~has or had~~, on the basis of attribute information of each port ~~of that~~ said second storage device ~~has~~, which is obtained as above, and

sets up, on a port of said second storage device which is selected as above, access restriction information of a port of said first storage device to which a volume, of which the port is utilized for an access, is assigned, on the basis of access restriction information and information of a volume of each port that said first storage device has, which are obtained as above.

13. (Currently Amended) An access restriction information setting apparatus which sets up access restriction information on a storage device, in a storage area network system having the storage device which determines ~~right or wrong of~~ whether or not an access request to a volume is permitted in accordance with access restriction information which is set up on a port which receives the request, and a host

computer which transmits an access request to said storage device through a first network, comprising:

a network I/F unit which is utilized for connecting to said second network, and
a calculation unit,

wherein, said calculation unit:

obtains access restriction information and information of a volume which are set up on each port ~~that~~of a first storage device ~~has~~, from said first storage device and attribute information including a port type and a status of utilization of each port ~~of~~ ~~at~~that the second storage device ~~has~~, from said second storage device, through said network I/F unit,

selects a port of said second storage device which is utilized for an access to a volume ~~of~~that said first storage device ~~has~~ ~~or~~ ~~had~~, on the basis of attribute information of each port ~~of~~that said second storage device ~~has~~, which is obtained as above, and

sets up, on a port of said second storage device which is selected as above, through said network I/F unit, access restriction information of a port of said first storage device to which a volume, of which the port is utilized for an access, is assigned, on the basis of access restriction information and information of a volume of each port ~~that~~ said first storage device has, which are obtained as above.

14. (Currently Amended) An access restriction information setting system having first and second storage devices which ~~determine right or wrong of whether or not~~ an access request to a volume is permitted in accordance with access restriction information which is set up on a port which receives the request, a host computer which transmits an access request to said first and second storage devices through a first network, and an access restriction information setting device which is connected to said first and second storage devices through a second network, wherein

said access restriction information setting apparatus has a network I/F unit which is utilized for connecting to said second network, and a calculation unit, and said calculation unit;

obtains access restriction information and information of a volume which are set up on each port of said ~~that a first storage device has~~, and attribute information including a port type and a status of utilization of each port ~~that a~~ of said second storage device ~~has~~, from said second storage device, through said network I/F unit,

selects a port of said second storage device which is utilized for an access to a volume of that ~~said first storage device has or had~~, on the basis of attribute information of each port of that ~~said second storage device has~~, which is obtained as above, and

sets up, on a port of said second storage device which is selected as above, through said network I/F unit, access restriction information of a port of said first storage device to which a volume, of which the port is utilized for an access, is

assigned, on the basis of access restriction information and information of a volume of each port that said first storage device has, which are obtained as above.

15. (Currently Amended) An access restriction information setting system having first and second storage devices which determine ~~right or wrong of whether or not~~ an access request is permitted to a volume in accordance with access restriction information which is set up on a port which receives the request, a host computer which transmits an access request to said first and second storage devices, a Fibre Channel switch which configures a Fibre Channel network which connects between said first and second storage devices and said host computer, a management server which sets up access restriction information on said first and second storage devices, and a LAN which connects between said first and second storage devices and said management server, wherein

said first and second storage devices have a FC I/F which connects to said Fibre Channel switch, and

said management server

has a LAN I/F unit which is utilized for connecting to said LAN, and a calculation unit, and

said calculation unit;

obtains access restriction information and information of a volume which are set up on each port of the FC I/F of said ~~that a~~ first storage device has from said first

storage device, and attribute information including a port type and a status of utilization of each port of the FC I/F of said~~that the~~ second storage device ~~has~~, from said second storage device, through said LAN I/F unit,

selects a port of a FC I/F on said second storage device which is utilized for an access to a volume of~~that~~ said first storage device ~~has or had~~, on the basis of attribute information of each port of the FC I/F that said second storage device has, which is obtained as above, and

sets up, on a port of the FC I/F of said second storage device which is selected as above through said LAN I/F unit, access restriction information of a port of the FC I/F of said first storage device to which a volume, of which the port is utilized for an access, is assigned, on the basis of access restriction information and information of a volume of each port of the FC I/F that said first storage device has, which are obtained as above.

16. (Currently Amended) An access restriction information setting apparatus according to claim 13, wherein

said calculation unit;

obtains the access restriction information and the information of the volume which are set up on each port of~~that~~ said first storage device ~~has~~, from said first storage device, through said second network,

selects, as the port of the second storage, a target port which is utilized for receiving an access request from said host computer to a volume of~~that~~ said first storage device ~~has~~, and an initiator port which is utilized for sending an access request from said second storage device to a volume of~~that~~ said first storage device ~~has~~, and

sets up access restriction information of a port of said first storage device to which a volume, of which the port is utilized for an access, is assigned, on the selected target port of the second storage device, and in addition, updates access restriction information of a port of said first storage device to which the volume is assigned so as to permit an access request only from the selected initiator port of said second storage device.

17. (Original) An access restriction information setting apparatus according to claim 13, wherein

said calculation unit specifies access restriction information which is set up on each port that said first storage device has and information of a volume, by obtaining a port of said host computer which is utilized for an access to a volume that said first storage device has and information of a port of said first storage device, from said host computer through said second network.

18. (Original) An access restriction information setting apparatus according to claim 13, wherein

said calculation unit

changes a port of said first storage device which is associated with each mount point of a file system of said host computer and a volume which is assigned to the port, to a port of said second storage device which is utilized for an access to the volume and a volume which is defined on the port.

19. (Original) An access restriction information setting apparatus according to claim 13, wherein

said first storage device sets up access restriction information on each port, by use of a first management table on which an information identifier of a volume and a source port of an access to be permitted are listed with a LUN unit with respect to each port, and

said second storage device sets up access restriction information on each port, by use of a second management table on which a LUN and an identifier of a volume are listed with a group unit of source ports of an access to be permitted with respect to each port, and

said calculation unit

obtains said first management table, and prepares said second management table as to each port of said second storage device which is selected as above, on

the basis of a listed content of said first management table, and updates said second management table which said second storage device has.

20. (Original) An access restriction information setting apparatus according to claim 13, wherein

in a case that said host computer has a plurality of paths which are used for an access to the same volume, a process of setting up said access restriction information to a volume is carried out at least twice separately to said plurality of paths.